Stevens Institute of Technology
Department of Electrical and Computer Engineering

Spring Semester 2025

CpE 462 Introduction to Image Processing

Homework 5: Due Apr. 3

5.1 Follow the steps carefully:

- Unzip the file "matlab_files.zip" and save all files in your working directory with images.
- Use your camera to take a color picture and save it in JPEG format.
- Then open the picture in Matlab use the "readjpg" function:

```
> IMG=readjpg('jpeg_file_name.jpg');
> size(IMG)
```

- When the image is stored in the 3-D matrix "IMG" with size of (x, y, 3) where x, y are the sizes of your picture (obtained from the "size" function), type

```
> r=zeros(x,y); g=zeros(x,y); b=zeros(x,y);   % initialization
> r=IMG(:,:,1); g=IMG(:,:,2); b=IMG(:,:,3);
```

- Then use the formula on page 34 of "CpE462-5.ppt" to create a new matrix Y which is the luminance component from "r", "g" and "b" matrices. Print out your Matlab procedures (using "diary" function).

- Use "dispimg" function to display Y, and print out this gray level image.

5.2 Given a histogram from an image as shown, use histogram equalization to find a mapping function between input pixel values and output pixel values.